

## **REMARKS**

The Office Action mailed 16 October 2009, has been received and its contents carefully noted. The pending claims, claims 1, 2, 4-6, 8-11, 13-22 and 24, were rejected. By this Response, claims 1 and 2 have been amended. Claims 4 and 5 have also been amended to alleviate a typographical error, i.e. a misplaced period. Support may be found in the specification and the claims as originally filed. No statutory new matter has been added. Therefore, reconsideration and entry of the claims as amended are respectfully requested.

### **Interview Summary**

Applicants appreciate the Examiner and his Supervisor taking the time to conduct a telephonic interview on 17 February 2010. During the interview, the Examiners agreed that amending the claims such that the gallium content is less than 100% with respect to all metallic atoms (i.e. contain some amount of indium) would overcome the art of record.

### **The Claimed Invention**

Applicants respectfully submit that claims 1 and 2, as amended, recite that the amorphous oxide thin film is chiefly composed of gallium, indium, and oxygen and has at least 62 at. % of gallium with respect to all metallic atoms in the transparent oxide thin film. Therefore, according to the claimed invention, the transparent oxide thin film has at least 62% gallium, but less than 100% gallium with respect to all the metallic atoms (due to the presence of indium).

### **Rejection under 35 U.S.C. 102(b)**

The Examiner rejected claims 1, 2, 4, 5, 8-11, 13-15, 19-22 and 24 under 35 U.S.C. 102(b) as being anticipated by Toppan (JP 2000-106034). Specifically, the Examiner deemed that Toppan discloses an embodiment where gallium is used alone in the oxide, i.e. 100% gallium content with respect to all the metal atoms.

Applicants respectfully this rejection is moot in view of the amendment to the claims. Therefore, the rejection under 35 U.S.C. 102(b) should properly be withdrawn.

**Claim Rejections – 35 U.S.C. 103(a)**

The Examiner rejected claim 6 under 35 U.S.C. 103(a) as being unpatentable over Toppan (JP 2000-106034) in view of Asahi (JP 09-291356). The Examiner rejected claims 16-18 as being unpatentable over Toppan and further in view of Nippon (JP 2004-127719) and Fujikake (US 20060152136).

Applicants respectfully submit that the cited documents, alone or in combination, do not teach or suggest the claimed invention. Specifically, as set forth in claims 1 and 2, the transparent oxide thin film has at least 62% gallium, but less than 100% gallium with respect to all the metallic atoms. Toppan and Minami do not teach or suggest oxide films having a gallium content of 62 at. % with respect to all metallic atoms and some amount of indium.

As noted by the Examiner, Toppan does not disclose the specific ratio of gallium in the overall oxide layer and Minami discloses a transparent conductive film having a gallium content of 15-49 at. %. Minami does not teach or suggest any other gallium content. Consequently, the combination of Toppan and Minami will, at most, result in a thin film having a gallium content of 15-49 at. % which falls outside of the range set forth in the instant claims. Further, Applicants respectfully submit that the cited documents, alone or in combination, do not teach or suggest the light transmittance of the films with respect to given wavelengths as set forth in claims 1 and 2. Thus, the combination of Toppan and Minami does not teach or suggest the present invention as a whole.

In addition, Applicants respectfully submit that Minami teaches away from the present invention. In particular, Minami teaches that when the gallium content is not more than 49 at. %, a pseudo-binary system of  $\text{Ga}_2\text{O}_3\text{-In}_2\text{O}_3$  is formed. See [0004] of English Translation. In other words, Minami teaches away from a gallium content of 49.1% or more because the film will include  $\text{GaInO}_3$  and the desirable properties of the  $\text{Ga}_2\text{O}_3\text{-In}_2\text{O}_3$  binary system will be diminished. Thus, Minami teaches away from a transparent oxide thin film having a gallium content of 62 at. % to less than 100 at. % according to the claimed invention.

Applicants respectfully submit that Asahi, Nippon and Fujikake do not alleviate the deficiencies of Toppan and Minami. Nowhere do Asahi, Nippon and Fujikake, alone or in combination, teach or suggest a transparent oxide thin film having a gallium content of 62 at. % to less than 100 at. % or the light transmittance with respect to a given wavelength according to

the claimed invention.

Since the cited documents, alone or in combination, do not result in the claimed invention as a whole and Minami teaches away from the gallium content set forth in the claims, the claimed invention is novel and unobvious. Therefore, the rejections under 35 U.S.C. 103(a) should be withdrawn.

**Request for Interview**

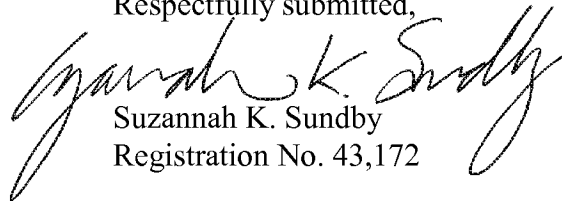
Either a telephonic or an in-person interview is respectfully requested should there be any remaining issues.

### CONCLUSION

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Therefore, it is respectfully requested that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Official action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, in the event that additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. 1.136(a), and any fees required therefor are hereby authorized to be charged to **Deposit Account No. 024300**, Attorney Docket No. **034145.004**.

Respectfully submitted,



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